Quality-Certified Training of Farmers on Organic Agriculture

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CerOrganic Competences

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CerORGANIC

List of Definitions, Acronyms and Abbreviations:

Term/Acronym/Abbreviation	Description
Competence	The ability to apply learning outcomes adequately in a defined context (education, work, personal or professional development). **Comment**: competence is not limited to cognitive elements (involving the use of theory, concepts or tacit knowledge); it also encompasses functional aspects (involving technical skills) as well as interpersonal attributes (e.g. social or organisational skills) and ethical values. **Source**: Cedefop, 2004, European Commission, 2006a. **Related terms**: know-how, knowledge, skills
EQF	European Qualification Framework for Lifelong Learning
EQARF	The European Quality Assurance Reference Framework for Vocational Education and Training
GMO	genetically modified organism
ICT	Information and Communication Technology: all technical means used to handle information and aid communication, including both computer and network hardware as well as necessary software
Learning Outcome	is defined as a statement of what a learner knows, understands and is able to do on completion of a learning process. The EQF therefore emphasises the results of learning rather than focusing on inputs such as length of study. Learning outcomes are specified in three categories – as **knowledge**, **skills** and **competence**. This categorization identifies that qualifications – in different combinations – capture a broad scope of learning outcomes, including theoretical knowledge, practical and technical skills, and social competences where the ability to work with others will be crucial
Lifelong Learning	All learning activity undertaken throughout life, with the aim of improving knowledge, skills and competences, within a personal, civic, social and or employment related perspective. Communication from the Commission "Making a European Area of Lifelong Learning a Reality", 2001a
OA	Organic agriculture
Qualification	The term qualification covers different aspects: (a) formal qualification: the formal outcome (certificate, diploma or title) of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards and/or possesses the necessary competence to do a job in a specific area of work. A

	qualification confers official recognition of the value of learning outcomes in the labour market and in education and training. A qualification can be a legal entitlement to practice a trade (OECD); (b) job requirements: the knowledge, aptitudes and skills required to perform the specific tasks attached to a particular work position (ILO). ***Source***: based on Eurydice, 2006; European Training Foundation, 1997; OECD, 2007; ILO, 1998. ***Related terms***: certification of learning outcomes, competence, European qualification framework, formal learning, informal learning, learning outcomes, non-formal learning, regulated profession, skill
Skill	The ability to perform tasks and solve problems. **Source**: Cedefop; European Commission, 2006a.
Trainer	Anyone who fulfils one or more activities linked to the (theoretical or practical) training function, either in an institution for education or training, or at the workplace. ***Comment***: (a) two categories of trainer can be distinguished: – professional trainers are training specialists whose job may coincide with that of the teacher in a vocational training establishment; – part-time or occasional trainers are professionals in various fields who take on, in their normal duties, part-time training activity, either in-company (as mentors and tutors of recruits and apprentices or as training providers) or externally (by occasionally offering their services at a training establishment); (b) trainers may carry out various tasks: – design training activities; – organise and implement these activities; – provide the actual training, i.e. transfer knowledge, know-how and skills; – help apprentices develop their skills by providing advice, instructions and comments throughout the apprenticeship. ***Source***: Cedefop, 2004; AFPA,, 1992. ***Related terms***: learning facilitator, teacher
Unemployed persons	Unemployed persons comprise persons aged 15 to 74 who were: a. without work during the reference week b. currently available for work, i.e. were available for paid employment or self-employment before the end of the two weeks following the reference week c. actively seeking work, i.e. had taken specific steps in the four weeks period ending with the reference week to seek

	paid employment or selfemployment or who found a job to start later, i.e. within a period of, at most, three months. ***Source***: Data collection, Eurostat[1]
Vocational education and training (VET)	Education and training which aims to equip people with knowledge, know-how, skills and/or competences required in particular occupations or more broadly on the labour market. ***Source***: adapted from European Training Foundation, 1997.

In the EQF "**knowledge**" is defined as "outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of work or study. In the context of the European Qualifications Framework, knowledge is described as theoretical and/or factual" (EQF, European Communities, Belgium 2008).

1 http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tsiem1

10 (accessed June 3, 2009)

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1. Executive Summary

The results of WP 1 (D1.2 OA Training Needs for CerOrganic Trainers and D1.3 Web-/Literature Review on existing OA Competences) were the main resources to develop the competences for the CerOrganic Curriculum for the Training of the Trainers (ToT) of farmers in Organic Agriculture (OA). The general competences from WP1 were specialized into core competences that the OA extension workers will achieve through the CerOrganic ToT.

These competences that are part of the CerOrganic quality assurance requirements were distributed within the technical thematic areas of OA, pedagogy, e-Teaching and e-Learning.

The **thematic areas of OA** for developing core competences are:

- Principles of Organic Agriculture, Legislation and Certification
- Soil Fertility and Management
- Weed Contol and (Agro)Biodiversity
- Pests and Diseases Management
- Organic Farm Management
- Post-Harvest Handling
- Marketing and e-Sales

The following **three categories that grouped learning theory** were used to develop core competences regarding Pedagogy, e-Teaching and e-Learning:

- Associative (Learning as activity through structured tasks)
- Cognitive (Learning through understanding)
- Situative (Learning as social practice).

Thematic areas regarding **Pedagogy** for developing CerOrganic core competences are:

- Social competence
- Methodological competence
- Motivational competence (all)

Thematic areas regarding **e-Teaching and e-Learning** for developing CerOrganic core competences are:

- Methodological competence
- Fostering self development and self paced e-learning
- Leadership skills
- eTechnology
- Language
- eCommunication
- Social competence
- Motivational competence

- Individual knowledge management and Knowledge Generation
- Learning competence
- Managerial competence

Subject matter knowledge and expertise was defined as pre-condition for OA training processes!

2. Introduction

2.1 Scope

The aim of work package 2 is to develop the training curriculum for OA extension workers (CerOrganic ToT), select and adapt existing supporting training content, and make it freely available online. Specifically WP2 will:

a) Identify the final competences CerOrganic extension workers should have upon completing the CerOrganic ToT (Training of Trainers)
b) Define the training curriculum topics for the CerOrganic ToT
c) Appropriately select, translate, adapt and publish existing training resources online for the CerOrganic purpose
d) Design a complete curriculum for the pilot CerOrganic ToT (for implementation and testing) including the adapted training resources and a template curriculum (for customizing by the user partners' countries)

To achieve these objectives:

a) The general competences from WP1 will be specialized into core competences that the OA extension workers will achieve through the CerOrganic ToT.
b) UZEI (Institute of Agricultural Economics and Information, Czech Republic) will lead the curriculum design for the CerOrganic ToT (including common topics of interest for all and specialized topics of interest for individual countries).
c) The preliminary training topics for the pilot CerOrganic ToT will be modified as determined by the results of WP1.
d) Five specialized curricula based on the CerOrganic ToT template will be developed to serve the five validation seminars (see WP4).
e) Training resources selected in previous initiatives (WP1) will be appropriately adapted, modified and translated to support the CerOrganic ToT session and validation seminars.
f) The training resources will be described with educational metadata (according the specifications from WP3) and published online in the CerOrganic Web portal.

This deliverable includes the elaboration of the overall competences identified in D1.2 and D1.3 into a specific list and explanation of the desired achievable competences for the CerOrganic trainee participating in the CerOrganic ToT from each of the five participating user countries.

2.2 Audience

This deliverable and its recommendations are primarily addressed to the partners of the CerOrganic project that will develop the CerOrganic Training of Trainers (ToT) Curriculum (Deliverable 2.2). It may also be found useful to all CerOrganic partners as it provides an overview of the competences a CerOrganic extension worker should have.

Secondly, the information provided in this report will be very interesting and helpful for organisations offering professional trainings and continuing education for (future) extention workers and OA consultants and which are interested in modern and up-to-date training techniques. As revealed in previous CerOrganic reports (see D1.2 "Report on OA training needs for CerOrganic Trainers" and D1.3 "Web-/Literature Review on existing OA Competences") the key issues to an excellent OA extension work are knowledge transfer between the different stakeholders, identification of site specific problems in organic farming and finally decision making.

The resources and platform developed through the CerOrganic project will provide a training for OA extension workers. The materials and communication infrastructure that will be available through this platform will assist and motivate those who wish to improve their practice and technique as organic agriculture extension worker as well as their pedagogical, e-learning and e-teaching competences. The CerOrganic platform may also provide a place where agricultural researchers and scientists can contribute further findings and assistance to the rural community.

2.3 Definition of learning outcomes, knowledge, skills and competence

For reporting purposes it is necessary to have a common understanding of definitive terms used to establish comparable standards. This report uses mainly the definitions developed for the European Qualification Framework for Lifelong Learning (EQF)[2] to utilize the common reference framework when examining the qualification systems from different countries in order to make them more transparent and easier to compare with each other.

A "**learning outcome**" is defined as a statement of what a learner knows, understands and is able to do on completion of a learning process. The EQF therefore emphasises the results of learning rather than focusing on inputs such as length of study. Learning outcomes are specified in three categories – as **knowledge**, **skills** and **competence**. This categorization identifies that qualifications – in different combinations – capture a broad scope of learning outcomes, including theoretical knowledge, practical and technical skills, and social competences where the ability to work with others will be crucial. In the case of CerOrganic the key competences of an excellent OA extension work are knowledge transfer between the different stakeholders, identification of site specific problems in organic farming and finally decision making.
The Learning and Teaching Center Macquarie University emphasizes that effectively constructed learning outcomes are a major help for designing meaningful and engaging assessment tasks. "If the outcomes are designed in such a way that they indicate what students will be expected to demonstrate at the end of the unit of study, it is easier to determine assessment tasks which allow students to demonstrate their understandings, skills or attitudes."[3]

Here is a scheme the Learning and Teaching Center Macquarie University provides:

[2] http://ec.europa.eu/education/pub/pdf/general/eqf/broch_en.pdf; visited on 02/12/2010

[3] Learning and Teaching Centre Macquarie University, 2008

"An effective set of learning outcome statements informs and guides both teachers and students.

For teaching staff, learning outcomes inform:

- *the content of teaching*
- *the teaching strategies used*
- *the sorts of learning activities/tasks students will undertake*
- *the assessment tasks set*
- *how the learning will be assessed*

For students, learning outcomes provide:

- *a solid framework to guide their studies and assist them to prepare for assessment*
- *a point of reference with regard to their own development of course and/or university-level graduate attributes."*[4]

The term "**knowledge**" is defined as "outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of work or study. In the context of the European Qualifications Framework, knowledge is described as theoretical and/or factual" (EQF, European Communities, Belgium 2008). Further to this definition, in the CerOrganic Project, National Workshops and personalized interviews took place in order to collect information from OA-related stakeholders about the fields of knowledge the agicultural experts should already posess before or accomplish during the CerOrganic training curriculum. For additional details please consult **D1.2 Report on OA Training Needs for CerOrganic Trainers**.

"**Skills**" are defined as "the ability to apply knowledge and use know-how to complete tasks and solve problems. In the context of the European Qualifications Framework, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) or practical (involving manual dexterity and the use of methods, materials, tools and instruments)".

The term "**competence**" is defined as "the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development. In the context of the European Qualifications Framework, competence is described in terms of responsibility and autonomy".

2.4 Input from D1.2: Report on OA Training Needs for CerOrganic Trainers - Desired Competences for Organic Agriculture Trainers:

The scope of Deliverable 1.2 – Report on OA Training Needs for CerOrganic Trainers - was to collect and analyze the needs of agricultural extension workers in terms of technical, knowledge transfer options and technological tools.

[4] Learning and Teaching Centre Macquarie University, 2008

Therefore in CerOrganic, five national workshops took place to collect information from OA-related stakeholders like farmers, OA certification bodies, OA experts (academics, researchers), policy makers and governmental employees, educational experts and so on, and to provide feedback on the CerOrganic training curriculum. The desired competences of an OA extension worker was one of the important issues that were targeted through questionnaires and open discussions. Personalized interviews with academic agricultural experts provided also a rich source of information in terms of desired competences for a prototype OA farmer's consultant/ extension worker.

Specific technical competences were then divided in two categories:

- what the participant is aware of
- what the participant is able to do

These competences were distributed within technical thematic areas (agriculture & OA) and pedagogy, technology and although do not exhaust the subject, will certainly inform the curriculum development.

The main conclusions concerning desired competences for CerOrganic trainers were as following:

- Prerequisite knowledge and skills data for future CerOrganic trainers were collected mainly by open discussions during workshops. Overall it was pointed out that a higher exposure both in terms of education and practice can alleviate for a CerOrganic OA trainee to receive and transfer knowledge effectively.

- It was also noted that latest technologies (e.g. internet), marketing and pedagogical skills can significantly improve the future CerOrganic trainer's efforts towards the final user.

- As a result of the national workshops it became apparent that the complexity of OA theory and philosophy precludes decision making from a precasted recommendation ("blanket recommendation[5]") as it is often delivered from a transmitter (advisor) to a receiver (farmer).

- In a modern form of OA extension, advisors should utilize the farmer's knowledge as well as an analysis of a site specific complex system of information to assist decision making (Ozkaya, 2001).Therefore a whole blend of competences directly connected to understanding of a complex system of biotic and abiotic factors and the ability to *consult*, *train* and *take decisions*, are needed.

- Offered technical (agriculture-related) topics are mostly adequate in all partner countries but a key issue is the ability to understand each ("site-specific") agroecosystem as a whole and facilitate decision making.

[5] Özkaya Tayfun, Extension and Training in Organic Farming and Participatory Methods, Cahiers Options Méditerranéenes –n° 6 http://Resources.ciheam.org/om/pdf/c61/00800153.pdf [last visited on 05/01/2011]

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- OA extension service's (and trainings) main focus remains agricultural production but several commercial farmers face socioeconomic and environmental issues. Therefore marketing, e-sales, farm management and other fields were suggested.

- Desired outcome competences include also: decisions making ability for a number of technical issues (crop protection and soil management, in particular) and communication towards education building.

- Competences can be assessed by presentations of practical exercises but also other means.

For additional details please consult **Deliverable 1.2 Report on OA Training Needs for CerOrganic Trainers**.

2.5 Input from D1.3: Desired Competences for Organic Agriculture Trainers from Web-/Literature Research on existing OA competences:

As an important step in designing the CerOrganic Training of Trainers all CerOrganic partners screened web and literature resources with proven reliability and excellence, in order to analyse the actual state of the art of competences concerning agricultural technical topics as well as pedagogical and e-teaching/e-learning competences of extension workers. Exploiting and analysing the current status of OA trainings and competences recommended by experts, enables the CerOrganic consortium to construct a new training utilising the strengths of existing courses and addressing areas that need further development and attention. Deliverable 1.3 reported the outcomes from the literature and web resources' review about skills and knowledge (i.e. competences) that OA extention workers should possess.

The main conclusions concerning desired competences for CerOrganic trainers were as following:

- One of the main goals of extension work is to provide farmers with a basic understandig of a closed agroecological system, its components and functions. Cees Leeuwis (2004) is even talking about "reinventing extension" as a professional practice. He points out that rather than promoting badly adapted, pre-defined innovations and ready-made solutions, that were developed by researchers with little understanding for the needs and problems the farmers are actually facing, extension organisations should take a more active role and co-design together with the farmers and external researchers. Moreover "sustainable agriculture typically requires relatively complex solutions that are carefully adapted to local agro-ecological and social conditions, and hence must be tailor-made" (Leeuwis, 2004). Of course, a profound knowledge of national and European legislation, regulations, obligations and standards of OA is very important in order to designs projects for the transition from a conventional to an organic cultivation. An extension worker can furthermore advise about biological and mechanical production processes and design ecologically based sustainable food. Finally, an OA extension worker consults farmers about nature protection and preservation of species.

- Through the web and literature research we found many sources concerning competences about biotic resources, like proposing the suitable seeds according to the organic farmer's needs and knowledge about seed biology, seed quality and seed testing as well as knowledge about agrobiodiversity, its components and complexity.

- Concerning abiotic resources management in OA farmers, OA experts, certification bodies and pedagogical experts all stated that extension workers in OA should be able to consult farmers competently about different organic fertilization methods, furthermore advise farmers on different soil types and about environmental and health impacts of overfertilization, of spraying of substances and about imbalance of water regime.

- Some of the competences reported by the CerOrganic partners could be grouped under the category "ecological horticulture". This category includes the ability to advise farmers about the selection of appropriate crops and about crop rotation, intercropping, mulching/soil coverage as well as organic greenhouse farming. Extension workers should advise farmers about the cultivation of vegetables, organic fruit and wine production and about market gardening. Some web and literature sources regarded abilities and knowledge about very specific cultivation techniques regarding organic olive agriculture, deciduous plants, the cultivation of citrus or vines plants.

- OA extension workers need to transmit to farmers knowledge about weed control and biological control. Extention workers should be able to decide when it is appropriate (monitoring) to design a pests biological control protocol for disease management based on concurrent concepts.

- Concerning animal husbandry, OA extension workers should be competent in advising farmers on the requirements imposed by the organic standards on livestock management like on appropriate species the potential role of livestock in the overall organic farm system. Also, they should communicate the importance that animal husbandry possesses in OA maintaining nutrient and energy.

- Regarding organic food production and processing, an OA extension worker should be able to teach farmers how to produce organic products following the methods of organic agriculture, how to apply key aspects of quality management as well as good knowledge about certification, accreditation, food safety scheme for agricultural products.

- Administrative skills for OA extension workers include effective time management and project management, as modern methods in organic farming "require farmers to manage and co-ordinate ecological processes and cycles carefully" (Leeuwis, 2004).

- Some competences related to ICT competences, which will be very important for using relevant electronic content in training and for international cooperation.

- Throughout all the competences we found concerning marketing in OA, the basic competence for an extension worker is inside knowledge about the organic market.

Furthermore he/she should advise farmers competently about effective and new ways of selling their products.

- Competences regarding pedagogy related to the use of different communication and presentation techniques, a variety of methods to train learners (online conference, twitter, google docs, website, ...) in order to teach effectively in both face-to-face and online environments. The OA extension worker "translates" between the farmers and the researchers and vice versa, as s/he stands between both parties. S/he should therefore promote honest communication trying to understand the farmers' ideas, opinion and experiences as well as the environment and social circumstances of organic farmers. "The challenge for extension (…) organisations, then, is to organise their interventions in a much more adaptive and flexible way (…). This may require new forms of monitoring, evaluation and securing accountability in connection with development efforts" (Leeuwis, 2004)

- Traditional training methods pose a challenge for people to have up-to-date access to OA information and methods. "Many of the challenges (…) can only be tackled if the agricultural sector develops and uses more sophisticated and better adapted knowledge and information (e.g. on localised agro-ecological processes, market developments, risks, etc.)" (Leeuwis, 2004). As a result, e-teaching and e-learning offer a number of advantages in VET (Vocational Education and Training) to transmit competences in OA. It is well established that the principle of life-long learning can be implemented easier by e-learning. Therefore part of the CerOrganic Training of Trainers could be offered by e-teaching and e-learning. The design of such a course/training should focus and be tailored to the needs of the learner, the farmer, incorporating communication platforms, design of learning material and creating a blend of online instruction with physical presence instructions.

3. Core Competences for CerOrganic Trainers regarding OA Topics

The results from Work Package 1: D1.2 "OA Traing Needs" and D1.3 "Literature Review on OA Competencies" were used to create groups of competences specific to the CerOrganic Curriculum for the Training of Trainers in Organic Agriculture. The competences were carefully selected in order to provide the future extension workers with a variety of skills and knowledge that today's OA experts and other involved stakeholders pointed out as crucial in order to fulfill the new challenges an OA extension worker is facing. Modern OA in many ways is more complex than conventional agriculture. Extension work does not consist of mere transmission of pre-defined recepies to farmers. "[…] it is self-evident that such types of agriculture require farmers to manage and co-ordinate ecological processes and cycles carefully" (Leeuwis, 2004). With the CerOrganic ToT extension workers will gain the competences needed to not only teach mere facts of OA, but to assist and support farmers with these challenges. Together with the farmers, CerOrganic extension workers will develop custom-made solutions and concepts that regard site specific ecological conditions as well as market needs and other productional factors.

The OA topics that are mentioned in this chapter represent competences that are generic and applicable to all CerOrganic trainees from different countries, such as the basic concepts (OA basics, ecologic systems, farm management basics, marketing basics, technological basics , training farmers methodologies, etc.). Divided in different subsections they detail those OA topics deemed as necessary outcomes for trainees after the allocated training period. These OA topics are described as core competences matched with the learning outcomes required for the relative competences.

3.1 Principles of Organic Agriculture, Legislation and Certification

The following subsection describes core competences in **Basic Principles of Organic Farming, Legislation and Certification**, that trainees should possess after the CerOrganicToT. It tackles issues and problems an OA extension worker is confronted with and will provide him/her with the needed tools for decision making.

Table 1 CerOrganic Competences regarding Basic Principles of Organic Farming, Legislation and Certification

Core Competences	Learning Outcomes The CerOrganic trainee will
Competence about Ecological Principles of OA has a profound understanding about ecological principles of OA, is familiar with the essential ecological terms and definitions of OA (agroecosystems, their components, functions, relationships) and knows how to communicate it to the farmers	• have a fundamental understanding of agrobiodiversity, its components and complexity, and be able to place it in a multidisciplinary perspective within the framework of sustainable agriculture • be able to advise farmers on agro-ecology, OA principles and techniques • consult farmers about the advantages of OA for sustainability (economical use of resources, climate protection and minimization of the ecological footprint) • advise farmers about the best use of available natural resources and inputs, and how to regenerate conditions for future production • know about the history of OA and the evolution of OA practices, in order to be familiar with the negative effects of conventional farming
Conversion Is able of consulting how to convert a conventional farm into an organic farm	• design projects for the transition from a conventional to an organic cultivation, within the framework of national and European regulations • understand the theory behind effective methods to convert a farm to organic production • apply methods for calculating basic qualitative and quantitative sustainability indicators
Legislation knows and understands all relevant Legislations, Regulations and knows how and when to apply them	• analyze the legislation in order to understand, explain and apply it • apply national and European legislation, regulations, obligations and standards concerning organic production, environmental, and quality assurance policies • advise farmers on the restrictions in OA about the use of genetically modified organisms (GMO)

Certification is familiar with organic certification schemes	• advise farmers on organic certification schemes and the importance and necessity of product certification
Biological Production and Use of Machinery in Production can advise about biological and mechanical production processes	• design ecologically based sustainable food systems among others through crop diversification schemes, efficient natural resources use and the use of appropriate management practices • familiarity with the energy consumption regarding use of machines in OA • advise farmers about health aspects of organic farming and organic food (i.e. nutritional value) • be aware of all aspects of agroecosystem processes and functioning

One of the core competences in Basic Principles of Organic Farming, Legislation and Certification, that trainees should possess after the CerOrganicToT is **competence about ecological principles of OA**. Therefore the CerOrganic ToT will provide the extension workers with a profound understanding about ecological principles and familiarice the trainees with the essential ecological terms and definitions of OA (agroecosystems, their components, functions, relationships). "Much of this knowledge is not readily available and needs to be developed and/or adoted 'on the spot' with close co-operation between framers, researchers and extensionists" (Leeuwis, 2004). As this co-operation between extension workers and farmers require fruitful communication, the CerOrganic ToT will also include communicative competences.

As a subject of major importance the CerOrganic ToT will provide the trainees with the important competences on how to **convert** a conventional farm into an organic farm making the best use of available natural resources and conditions. It will enable the trainees to design these transition within the framework of national and European regulations and apply methods for calculating basic qualitative and quantitative sustainability indicators. The ToT will present the trainees with effective methods to convert a farm to organic production.

The CerOrganic ToT will cover all relevant **legislations, regulations, obligations and standards** concerning organic production, environmental, as well as quality assurance policies. It will enable the trainees analyze these legislatios in order to understand, explain and apply them.

The CerOrganic ToT will familiarize the trainees with organic **certification schemes** in a way that the trainees will advise farmers competently on these schemes and their importance and necessity.

During the ToT the trainees will learn how to advise farmers on **biological production and the use of machinery** in production processes as well as their energy consumption. The trainees will advise farmers competently about health aspects of organic farming and organic food and support them in designing ecologically based sustainable food systems

among others through crop diversification schemes, efficient natural resources use and the use of appropriate management practices.

3.2 Soil Fertility and Management

The following subsection describes core competences in **Soil Fertility and Management** of organic farming, that trainees should possess after the ToT.

Table 2 CerOrganic Competences regarding Soil Fertility and Management

Core Competences	**Learning Outcomes** The CerOrganic trainee will
Crop rotation understands and is able to design rotation schemes in OA	• be familiar with crop rotation (crop suitability, conditions, not-tolerant plants, balance utilization) • plan a crop rotation program for a farm • advise farmers on advantages and relevant techniques of crop rotation
Soil Fertility and Management is competent in assessing soil quality and advise farmers	• be familiar with types of soil and able to describe soil according to its structure, colour and appearance • interpret nutrient availability and advise farmers to adjust plant nutrition inputs for maximum and optimum production – consideration for environment protection • know which species and techniques to use as cover crops • soil tillage understanding of its advantages, advise on methods to prevent and curtail soil erosion • advise farmers about the methods of intercropping in organic crop production
Organic matter and Composting is competent in assessing soil quality and advise farmers	• identify appropriate ways of mulching/soil cover - can apply mulching • present methods of natural fertilizer use (compost, manures) and the most suitable fertilization methods for each type of cultivar and the best time and rate of application of it • manage organic residues, wastes etc for the production of compost

This subsection presents the core competences in **Soil Fertility and Management** of organic farming an extension worker will gain through the CerOrganic ToT. Through the ToT the trainees will gain understanding of the complexity of the specific role of soil fertility and its

maintenance in OA as well as problems that can occur in the field of soil fertility. The CerOrganic ToT will familiarize the trainees with different types of soil, their structure, colour and appearance, and alter the trainees' competence in assessing soil quality.

The ToT will enable the trainees **to analyze problems** competently, to search for resources in the literature and the internet to solve these problems, and to develop solutions leading to decisions on increase and maintenance of soil fertility. The trainees will learn to interprete nutrient availability as well as methods of natural fertilizer use, like compost or manures, and the most suitable fertilization methods for each type of cultivar and the best time and rate for application. The trainees will be able to identify appropriate ways of mulching as well as species and techniques to use as cover crops.

Through the CerOrganic ToT the trainees will develop **consultation skills** in order to advise farmers on the most appropriate amendments for their quality of soil, to adjust plant nutrition inputs for maximum and optimum production, to manage organic residues, wastes etc for the production of compost and advise farmers about the methods of intercropping in organic crop production. The trainees will understand the advanteges of soil tillage and will be able to advise farmers on methods to prevent and curtail soil erosion. The trainees will understand the principles of crop rotation and be able to advise on its advantages and relevant techniques, but also to design and plan crop rotation programs for farmers.

3.3 Weed Contol and (Agro)Biodiversity

The following table describes core competences in **Weed control and Biodiversity** of organic farming, that trainees should possess after the ToT.

Table 3 CerOrganic Competences regarding Weed control and Biodiversity

Core Competences	**Learning Outcomes** The CerOrganic trainee will
Functional Agrobiodiversity in OA understands the importance of the interaction between populations during organic farming production – is able to connect with resources management.	• recognise the local fauna and flora • understand the significance of biodiversity for OA systems • give farmers a good insight into complex ecological processes and interconnections • consult farmers about nature protection and preservation of species with regard to the laws and regulations concerning the protection of nature and species • understand the different impacts a farm has on the agrobiodiversity depending on its intensity level
Agrobiodiversity in Crop protection, Soil Fertility and Weeds Management understand the role of agrobiodiversity in	• role of agrobiodiversity in farmscape planning and for plant protection (biological control)

farmscape planning and for plant protection, soil fertility and weeds management	• know positive and negative characteristic of weeds, know range of weeds types. Assess the necessity for weed control in OA. • Transmits the connection between agrobiodiversity and weeds management to the farmers • apply the relevant techniques for weed management: tillage, cover cropping and beneficial species, mulching, crop rotations, and timing of cultivation
Selection of varieties in OA select appropriate genetic resources according to public health safety, for improving biodiversity and food security	• advise about new, resistant, local varieties • seed production and conservation of traditional varieties for agrobiodiversity improvement • choose the most suitable cultivation methods according to the available resources (water, soil type etc.) • knowledge on seed-borne pathogens, potential human harmful substances (mycotoxins etc.)

The CerOrganic ToT will provide trainees with the following three (3) core competences in **Weed control and Biodiversity** of organic farming:

The trainees will be knowledgeable in **Functional Agrobiodiversity in OA**, this includes recognising the local fauna and flora and the significance of biodiversity for OA systems as well as understanding the importance of the interaction between populations during organic farming production. With this understanding, extension workers will be able to provide farmers with a good insight into complex ecological processes and interconnections, to visualize the different impacts a farm has on the environment depending on its intensity level, in order to consult farmers about nature protection and preservation of species with regard to the relative laws and regulations.

The CerOrganic ToT will emphasize the **role of agrobiodiversity in farmscape planning and for plant protection**. The trainees will know the positive and negative characteristic of different weeds and their range. The trainees will transmit the **connection between agrobiodiversity and weeds management** to the farmers, will competently assess the necessity for weed control in OA and advise farmers on the relevant techniques for weed management, like tillage, cover cropping and beneficial species, mulching, crop rotations, and timing of cultivation.

The CerOrganic trainees will learn to **select appropriate genetic resources** according to public health safety, for improving agrobiodiversity and food security in order to advise farmers competently about new, resistant and/or local varieties and the most suitable cultivation methods according to the available resources. This also includes seed production

and conservation of traditional varieties as well as the knowledge on seed-borne pathogens and potential human harmful substances likemycotoxins.

3.4 Pests and Diseases Management (Biological Control of Pests and Diseases)

The following table presents core competences in **Biological Control of Pests and Diseases** of organic farming, that trainees should possess after the ToT.

Table 4 CerOrganic Competences regarding Biological Control of Pests and Diseases

Core Competences	**Learning Outcomes** The CerOrganic trainee will
Biological control and Pest Management can decide on monitor threshold levels, knows how different populations of organisms interact in an agroecosystem affecting decisions on pest control methods	• be up-to-date about the most harmful pathogens for each type of organic production and about the various methods of control • know practical (physical, mechanical etc.) methods of pest population monitoring and techniques for equilibrium maintenance • be able to design a complete pests biological control protocol • advise on local natural enemies and natural control methods (beneficial microorganisms, mass trappings). Propose the appropriate beneficial insects with focus on local beneficial insect species and methods to exploit them • develop strategies for disease management based on concurrent concepts of plant-pathogens interactions leading to implementing control measures that are cost efficient and environmentally friendly
Permitted chemicals in OA be familiar with environmental hazards of chemicals, permitted substances and their use in OA	• advise on permitted substances and methods of use of these substances and/or how to access this information (via internet databases) • know environmental hazards of pesticides and their path of pollution. Proper techniques for application to minimize contamination
Alternatives for Biological Pest Management be familiar with different types of plant protection and know when and how to use it	• select the most suitable plant protection methods (physical, mechanical etc.) • advise farmers about biological plant protection and allowed substances in OA (positive lists)

Biological control and Pest Management is one of the core competences in **Biological Control of Pests and Diseases** of organic farming. The CerOrganic ToT enables trainees to identify different kinds of pests, to monitor threshold levels and to understand the interaction of different populations of organisms in an agroecosystem and how this affects pest control. The ToT provides trainees with up-to-date information about the most harmful pathogens for each type of organic production and about the various methods of control as well as practical methods of pest population monitoring and techniques for equilibrium maintenance. After the CerOrganic ToT the trainees will be able to design complete pests biological control protocols and to develop strategies for disease management based on concurrent concepts of plant-pathogens interactions leading to implementing control measures that are cost efficient and environmentally friendly. The trainees will advise farmers competently on local natural enemies and natural control methods and propose them appropriate beneficial insects with focus on local species and methods to exploit them.

The CerOrganic ToT will enable trainees to advise on **permitted chemicals in OA** and their environmental hazards and path of pollution. The trainees will be able to show farmers methods on how to use these substances, proper techniques for application in order to minimize contamination and how to access information on permitted substances and their use in OA via internet databases.

The CerOrganic ToT will also alter the trainees' competence in **Alternatives for Biological Pest Management**, like selecting the most suitable physical or mechanical plant protection methods. After the ToT the trainees will be familiar with different types of plant protection and know when and how to use it. They will be able to advise farmers competently about biological plant protection and allowed substances in OA.

3.5 Organic Farm Management

The following table describes core competences in **Organic Farm Management**, that trainees should possess after the ToT.

Table 5 CerOrganic Competences regarding Organic Farm Management

Core Competences	Learning Outcomes The CerOrganic trainee will
Management Competences designs a management plan (timing, kind of crop, finances, market demands, climate, resources etc.)	• optimize the use of inputs and keep external inputs to a minimum • assess the interaction between different parts of the system • develop a farm budget and cost benefit analysis for the farm • show farmers how to plan and organize crop rotations to successfully manage soil occupancy and yield supply • teach farmers how to use computers for farm management and promotion and sales • advise farmers in basic accounting
Communicative Competences, Networking facilitates communication and information exchange between relevant stakeholder	• organize collaboration between farmers (for sales, use of packaging and farm equipment, etc) • negotiate successfully between different stakeholders

As a core competence in **organic farm management**, the CerOrganic ToT will enable trainees to design management plans, optimizing the use of inputs and keeping external inputs to a minimum. Therefore the ToT will provide trainees with the necessary competences to assess the interaction between different parts of the system and to develop a farm budget and cost benefit analysis for the farm. The trainees will consequently be able to show farmers how to plan and organize crop rotations to successfully manage soil occupancy and yield supply and how computers can be used for farm management.

Through the CerOrganic ToT extension workers will also be trained in **communicative competences and networking,** in order to communicate, negotiate and exchange information successfully between relevant stakeholder. The trainees will be able to help farmers organizing collaboration for sales, for use of packaging and farm equipment and other scopes.

3.6 Post-Harvest Handling

The following table describes core competences in **Post-Harvest Handling of Organic Farming Products**, that trainees should possess after the ToT.

Table 6 CerOrganic Competences regarding Post-Harvest Handling of OA Products

Core Competences	Learning Outcomes The CerOrganic trainee will
Technical Competences in Post Harvest Handling of OA Products advises farmers on the optimum post-harvest handling to enhance quality and reduce poor yields	• demonstrate the impacts of different harvest techniques on production costs • counsel farmers on most suitable techniques and materials for packaging • give advise with optimum storage conditions for each product
Competences in Organic Food Production and Processing advises farmers how to produce organic products following the methods of organic agriculture	• be aware of several locally important processing techniques (e.g. oil extraction techniques, cheese and yogurt production)
Competences in Quality Management for OA Products knows environmental friendly methods that assure product quality, their potential problems	• apply key aspects of quality management • understands quality control benefits

The CerOrganic ToT will provide the trainees with technical competences in **post harvest handling of OA products**. The trainees will be able to advise farmers competently on the optimum post-harvest handling to enhance product quality and to reduce loss, to demonstrate the impacts of different harvest techniques on production costs and to counsel farmers on most suitable techniques and materials for packaging. The trainees will also be able advise farmers about optimum storage conditions for their products.

The ToT will provide trainees with competences in **Organic Food Production** following the methods of organic agriculture and several locally important processing techniques. The training will enable trainees to competently advise farmers on organic food production.

By the end of the CerOrganic ToT trainees will possess relevant competences in **quality management for OA products** and will understand the benefits of quality control. The trainees will advise farmers on environmentally friendly methods that assure product quality, their potential problems and important aspects of quality management.

3.7 Marketing and e-Sales

The following list describes core competences in **Marketing and e-Sales of OA Products**, that trainees should possess after the ToT.

Table 7 CerOrganic Competences regarding Marketing and e-Sales of OA Products

Core Competences	Learning Outcomes The CerOrganic trainee will
Marketing Competence Advise on effective ways of selling the products	• participate in modern marketing and advertising methods (international markets, internet sales, exhibitions, local specialty markets, direct sales, etc) • possess inside knowledge about the organic market (demand, consumer, supply, …) • support farmers with market analysis and the preparation of a marketing plan • advise farmers on developing an effective supply chain
Advantages of organic products gains in experience of the organic and agro-ecological market on a global level	• know the factors that affect the national and international vegetable market • advise farmers on ways of adding extra value to organic products (quality, safety and implementation of innovative practices)
Knowledge about different procedures in OA obtains an analytical and critical approach to production, handling and trading conditions of organic products	• have a profound knowledge of production, handling and trading of organic products • understand the importance of organic vegetable production in agricultural economy
Selling OA products effectively can stimulate new and economically sound ways of selling OA products	• evaluate alternatives for the market promotion of the farmers' products • show farmers new ways of corporate selling • advise farmers on how to promote effectively their farm image • advise on e-selling • know about the importance of cooperation in product selling • be able to implement long term contracts with large companies and supermarkets
Knowledge about EU Policies understands and applies EU policies concerning OA	• apply the EU organic farming policies in combination with consumers' trends

One of the core **competences in marketing** and e-sales of OA products is to advise farmers on effective ways of selling their products, provide them with market analysis and the preparation of marketing plans and support farmers on developing an effective supply chain. During the CerOrganic ToT the trainees will therefore learn how to participate in modern marketing and advertising methods and acquire inside knowledge about the organic market.

The trainees will understand the **advantages of organic products** and be able to advise farmers on ways of adding extra value to organic products. Therefore the ToT will present trainees with the factors that affect the national and international organic and agro-ecological market on a global level.

The training will provide the trainees with a profound **knowledge of production, handling and trading of organic products**. The trainees will obtain an analytical and critical approach to production, handling and trading conditions of organic products and understand the importance of organic vegetable production in agricultural economy.

After the CerOrganic ToT trainees will be able to stimulate **new and economically sound ways of selling OA products**. They will evaluate alternatives for the market promotion of the farmers' products and show farmers new ways of corporate selling. The trainees will be able to advise farmers on how to promote effectively their farm image and on e-selling. After the ToT trainees can help farmers with the implementation of long term contracts with large companies and supermarkets and with stimulate cooperation in product selling.

The trainees will understand and apply **EU policies** concerning EU organic farming in combination with consumers' trends.

3.8 Livestock in OA

The following list describes core competences about Lifestock of organic farming, that trainees should possess after the ToT.

Table 8 CerOrganic Competences regarding Lifestock in OA

Core Competences	**Learning Outcomes** The CerOrganic trainee will
Agricultural system using livestock applies techniques to connect inputs and outputs of an agricultural system using livestock	• compare and solve problems relevant to the climatic conditions • advise about using livestock to minimize external inputs and for weed suppression and soil improvement • consult farmers about the appropriate fodder and management of fodder crops
Livestock management applies on the requirements imposed by the organic standards on livestock management	• advise farmers on the appropriate species • know about the potential role of livestock in the overall organic farm system, including potential integration of livestock and cropping systems
Welfare of Lifestock advises about welfare requirements of lifestock	• advise about welfare oriented animal husbandry • explain prevention methods of improving

	animal health • understand the basics of the use of alternative medicine (homeopathy, phytotherapy…)
Technical Competences advises farmers about hand tool and machinery use in OA	• E.g. advise farmers about milking and milking facilities in OA

The CerOrganic trainees from Austria should get **knowledge about the potential role of livestock** in the overall organic farm system, including potential integration of livestock and cropping systems. The CerOrganic trainees should apply the requirements imposed by the organic standards on livestock management. Through the CerOrganic ToT the trainees will develop **consultation skills** in order to advise farmers on the **appropriate species**, the appropriate fodder and management of fodder crops. One of the most important organic standards on livestock is **welfare oriented animal husbandry**. The CerOrganic trainees should gain competences to explain prevention methods of improving animal health. The CeroOrganic trainees from Austria will gain **technical competences** to advise farmers about hand tool and machinery use in OA. It was overall decided to include this particular section and its competencies within the case studies of different CerOrganic countries (e.g. Austria).

4. Core Competences for CerOrganic Trainers Pedagogy, e-Teaching and e-Learning

The pre-cursor to the design of any training framework and platform is the consensus of understanding necessary to what will transpire and what will be achieved during the training period. The quality of learning instigated by a training platform is dependent upon that platform's structure and the expectations of the designers of the particular training platform. The foundation of learning in any education platform is one of reshaping and developing experience. Knowledge is transformed information (Laurillard, 1993), where that information has been manipulated through synthesis and evaluation facilitated by a particular pedagogical approach.

Selecting appropriate pedagogies and aligning those with a particular approach are dependent upon the nature of the learner and the core purpose of the intended course. Whilst there are pedagogical models aligned with particular learning theories, there are variables that affect the leaning process that transcend one particular theory. Mayes and de Freitas (2004) developed three categories that grouped learning theory:

- Associative (Learning as activity through structured tasks)
- Cognitive (Learning through understanding)
- Situative (Learning as social practice).

The design of a pedagogical framework around these core elements of learning coupled with the use of eLearning effectively provides the potential to move beyond transmission modes of learning. Such frameworks allow the promotion of engagement with both lived experience as well as the knowledge claims of others (Conole et al, 2007).

The following subsections detail those pedagogies deemed as necessary outcomes for trainees after the allocated training period. These pedagogies are described as core competences matched with the learning outcomes required for the relative competences. Where possible we list the appropriate categories defined by Mayes and de Freitas (2004) between brackets next to the related competences. If all three categories are appropriate, the term "all" is indicated.

The following list describes core competences in **Pedagogy** of organic farming courses, that trainees should possess after the ToT.

Table 9 CerOrganic Competences regarding Pedagogy

Core Competences	**Learning Outcomes** The CerOrganic trainee will
Social competence (Cognitive and Situative) is able to evaluate the context of the learning situation and determine the expectations of the learners/farmers	• be aware of environment and social circumstances of organic farmers • communicate effectively in various environments • have good inter-personnel skills and promote effective communication trying to understand farmers ideas, opinion, experiences • be able to interpret and understand the different levels of farmers' knowledge/experience • communicate" the specific languages of the farmers to researchers and vice versa • use innovative methods for moderation • be a leader and still a team player • initiate participation, sharing knowledge and working in groups
Methodological competence (Associative and Situative) is able to implement suitable learning models and methodologies in a course	• structure appropriate learning material for different individual users (beginners, intermediate, ...) and for different target groups
	• use different presentation techniques and select the best presentation method for the specific target audience
	• develop effective teaching material for both face-to-face and online environments
	• use a variety of methods to train learners (online conference, twitter, google docs, website, ...)
Motivational competence (all) is able to motivate learners/farmers	• inspire confidence for people to use the system • be enthusiastic and convincing when promoting new ideas

After the **ToT**, a CerOrganic trainee will be able to use a variety of presentation techniques and select the best presentation method for the specific target audience. He or she will be able to structure appropriate learning material for different users (beginners, intermediate, ...) and for different target groups and will use a variety of methods to train learners/farmers (online conference, twitter, google docs, website, ...) He/she will therefore develop effective teaching material for both face-to-face and online environments and use innovative methods for moderation.

"Hence, apart from 'doing (joint) research', working on innovation has a lot to do with *creating support networks* and negotiating new arrangements between various stakeholders (…) this may require new tasks, skills and activities by extension organisations. (…) Hence, the issues we are dealing with are not just agricultural or relating to land-use only; they are concerned more broadly with rural resource management. Resources in this context include not only water, land, biological processes and biophysical inputs, but also human relations, forms of organisation, economic and legal institutions, knowledge or skills (Leeuwis, 2004; Uphoff, 2000) The CerOrganic trainee will inspire confidence amongst farmers to use the system as well as "translate" the specific languages of the farmers to researchers and vice versa, as trainee acts as a facilitator between both parties to achieve the best possible outcome. This also means that he/she will be able to communicate effectively in various environments and be enthusiastic and convincing when promoting new ideas.

The CerOrganic trainee will be able to easily interact with the farmers and will promote effective communication by trying to understand farmers ideas, opinions and experiences. He/she will be a leader as well as a team player and will initiate participation, knowledge sharing and working in groups. It will be important for the trainee to understand the environment and social circumstances of organic farmers and be able to interpret the farmer's knowledge/experience.
"Improving food production and fostering economic development is not just a matter of individuals receiving messages and adopting the right technologies, but has much more to do with altering inter-dependencies and co-operation between various actors (Leeuwis, 2004).

4.2 e-Teaching and e-Learning

The following list describes core competences in **e-Teaching and e-Learning** of organic farming, that trainees should possess after the ToT.

Table 10 CerOrganic Competences regarding e-Teaching and e-Learning

Core Competences	**Learning Outcomes** The CerOrganic trainee will
Methodological competence (Cognitive and Situative) is able to implement suitable learning models and methodologies in a training approach/platform	• provide different learning strategies and techniques. • have a rich portfolio of methods for the course design. • develop and convey learning content in an institutional context. • Be clear about course requirements and knows how to plan appropriate student workloads. • develop and design learning scenarios suitable for a given institutional context.
Fostering self development and self paced e-learning (Cognitive and Situative) is able to help learners/farmers in their own development of learning skills including self paced learning relevant for the various learner types, learning cultures and given educational background(s)	• encourage and enhance metacognition with appropriate material and practice to advance the metacommunication • promote reflection • assist learners/farmers in the development of their critical thinking skills • empower the learner and extend learning beyond the classroom walls
Leadership skills (all) is able to set the pace and the tone in a training	• lead individual sessions and a whole learning community over the necessary time period • handle conflicts in a constructive way
eTechnology (all) Is able to use media in a pedagogical meaningful way	• facilitate the range of online activities that are supportive of learning • select suitable media for blended learning • effectively translate the content for online delivery • effectively use the pre-determined course technologies to support online learning • deal with any technical or other media related problem • have a good understanding of the limits and limitations of the information and

	communications technology • facilitate transparency of technology flow to demonstrate the relationship between the system, the software the interface selected and the user
Language (Situative) is able to adapt the training terminology to text text that is suitable for the needs of learners/farmers	• communicate in a clear language and use unambiguous terminology that Learners/farmers can understand.
Competence for eCommunication is able to perceive communicative signals over the distance and communicate clearly and empathically their intentions	• communicate on a personal and motivating level with groups/individuals • handle a challenging number of email communications without loosing focus and knows Netiquette, etc. • model good participation • be able to feel into the virtual learning group and to handle conflicts over the distance
Social competence is able to evaluate the context of the learning situation and determine the expectations of the learners/farmers	• help learners/farmers to start the course as well as to recognise when intervening action needs to be taken and takes it • understand the needs of each learner, manages their expectations and offers advice or counselling
Motivational competence (all) is able to motivate learners/farmers	• provide feedback, generate enthusiasm, maintain interest and help when farmers find learning situations challenging • be confident and believe in e-Learning
Competence for individual knowledge management and Knowledge Generation (Cognitive and Situative) is able to initiate collaborative learning processes and Knowledge Generation	• be able to research information, select, organize and integrate it • know where to find relevant information and how to disseminate them appropriately • guide participants to identify appropriate information sources and how to evaluate/make use of them according to their learning needs
Learning competence is able to use strategies on how to maintain high professional standards in their teaching skills and subject matter knowledge	• be a lifelong learner • keep informed of the latest trends and issues • continually improve his/her skills and knowledge • network with others involved in online education • actively exchange knowledge and experiences among a Community of practitioners

Managerial competence is able to cooperate actively with institutional management especially concerning selection of participants, user registration and certification/tracking of learning progress and results, further learning needs etc.	• be concerned with necessary issues of learner registration, record keeping, etc. • be able to link to the institution's processes (establishment of general procedures for discussion and development of activities within the organization)
Subject matter knowledge and expertise is able to demonstrate a well-defined knowledge in the subject domain of delivery	• is able to articulate a broad filed of knowledge and expertise in the designated subject with learners and colleagues

Information and communications technology (ICT) can support change in teaching practice and enhance learning.
After the **ToT**, a CerOrganic trainee will understand current practices in elearning and the assessment of professional development in OA training.

For good **methodological practice** the CerOrganic trainee will be able to demonstrate competence and implement suitable learning models and methodologies in a course. They will:

- provide tutorial assistance which complements the interactive design of a given online/blended learning course
- guide a learning community according to individual as well as institutional needs
- motivate learners by using synchronous as well as asynchronous e-tools
- initiate and guide various learning processes from peer group learning to one-to-one coaching

The CerOrganic trainee will be able to develop and facilitate an effective course by:

- providing different learning strategies and techniques
- developing and using a rich portfolio of methods for the training design
- developing and disseminating training content in an institutional context
- being clear about course requirements and will knowing how to set appropriate study loads
- developing and designing learning scenarios suitable for a given institutional context

The competence for **fostering self development and self paced** e-learning will be a critical skill for a CerOrganic trainee to be able to help farmers in their own development of learning skills including self paced learning relevant for the various learner types, learning cultures and given educational background(s).

The CerOrganic trainee will try to enhance metacognition with effective learning practice to advance the metacommunication. The effective learning practices adopted by trainees will include reflection and the development of critical thinking skills. The CerOrganic trainee will empower the farmer to assume responsibility for their own learning.

CerOrganic trainees will have **leadership skills** in order to set the pace and the tone in a training session/program. The CerOrganic trainee will be able to lead individual sessions and

a whole learning community over the necessary time period. S/he will be able to handle conflicts in a constructive way

eTechnologies are needed to use media in a pedagogical meaningful way, to enable e-learning scenarios and enrich them using the right media and communication formats. The CerOrganic trainee will be able to facilitate a range of online activities that support the student learning environment. The CerOrganic trainee will be able to select suitable media and will translate the content for online delivery. He or she will effectively use whatever technology has been selected to support online learning. The CerOrganic trainee will use the communication technologies, email, discussion, etc., efectively. S/he will be able to deal with any technical or other media related problem. The CerOrganic trainee will have a good understanding of the limits and limitations of the information and communications technology. S/he will facilitate transparency of technology flow for an adequate relation between the system, the software, the interface selected and the user.

CerOrganic trainees will possess the ability to be able to develop course material in a way that is easily understood by the learner**.** The CerOrganic trainee will be able to adapt and "translate" the course terminology fro farmers. This is especially essential in case training is provided in a foreign language, that farmers can understand the terminology used. The CerOrganic trainee will communicate in a clear language and will use unambiguous terminology.

Computer mediated communication, eCommunication, requires effective communicative skills and is possibly more demanding than physical meetings. The CerOrganic trainee will be able to perceive communicative signals over the distance and communicate clearly and empathically their intention.
The CerOrganic trainee will be able to communicate on a personal and motivating level with groups/individuals. S/he will be able to handle a challenging number of email communications without loosing focus and with Netiquette, etc. S/he will be able to model good practice and participation. S/he will be able to understand the personal synergies within a virtual learning group and be able to handle conflicts over the distance.

Emotional competence describes the ability to perceive the groups atmosphere and understand the farmers expectations. The CerOrganic trainee will help learners to start courses as well as to recognise when action needs to be taken and will take it. The CerOrganic trainee will understand the needs of each farmer, manage their expectations and offer advice or counselling.

Integration competence describes the ability to connect farmers to the institutions, share information and procedures and culture and value with them. The CerOrganic trainee will encourages contacts between farmers and OA organizations, explain guidelines, etc. The CerOrganic trainee will help to integrate farmers into the OA institution and its culture.

To motivate farmers is a key concept in OA training which demands specific skills for the **motivational competence**. The CerOrganic trainee will give feedback, generate enthusiasm, maintain interest and help when the going gets tough. The CerOrganic trainee will be confident and believe in e-Learning.

Competence for individual Knowledge Management and Knowledge Generation: OA training is a process which demands a high level of knowledge management ability in order to keep up with demands on different levels: pedagogical , subject matter and communication requirements. The CerOrganic trainee will be able to initiate collaborative learning processes and Knowledge Generation. The CerOrganic trainee will be able to research information, select, organize and integrate it. The CerOrganic trainee will know where to find relevant information and how to use that information appropriately. The CerOrganic trainee will be able to guide participants to identify appropriate information sources and how to evaluate/make use of them according to the training needs

Learning Competence: The CerOrganic trainee will be able to utilise strategies to consistently update their expertise through professional development in training skills and subject matter knowledge. The CerOrganic trainee will be a lifelong learner and will keep informed of the latest trends and issues; continually improve his/her skills and knowledge. S/he will network with others involved in online education. S/he will actively exchange knowledge and experiences among an e-community of practitioners.

Managerial Competence: The CerOrganic trainee will be able to cooperate actively with institutional management especially concerning selection of participants, user registration and certification/tracking of training progresses and assessment, further training needs etc. The CerOrganic trainee will be concerned with necessary issues of farmers' registration, record keeping, etc. S/he will be able to keep the link to the institution's processes (Establishment of general procedures for discussion and development of activities within the OA organization)

Subject matter knowledge and expertise is a pre-condition for OA training processes. The CerOrganic trainee will be aware of the subject s/he is teaching. The knowledge of the CerOrganic trainee will be appropriate to the needs of the course.

5. Conclusion and Recommendations

5.1 Training of Advisors/Trainers on Organic Agriculture

Agriculture represents an area where there is a need for organizing information services in the form of consultation. In Organic Agriculture (OA), decision making is multi-factorial, site specific and knowledge intensive. Human interaction is essential and it involves diagnosis of the problem, data analysis and application. Extension workers can not offer advice in the form of predefined packages and step-wise instructions. Together with farmers (an essential source of knowledge) they evaluate and provide "tailor-made" decisions "on-the-spot". The rapid development of information and communication technologies, introduce new norms in rural areas. Modern agriculture consultants equipped with computers provide services where increasingly, applied knowledge is regarded as a marketable product and agricultural extension is regarded a professional practice that needs to be reinvented (Leeuwis, 2003).

The 2011 "Training of Advisors/Trainers on Organic Agriculture" adresses these developments by providing a certified training program based on the European Quality Assurance Reference Framework (EQARF). The training is a blended learning approach to produce highly qualified consultants of organic farmers. It creates opportunities for further trainings and entrepreneurialism for the public and private sector.

The blended learning program includes a 7-days summer school in Chania, Crete, which is hosted by MAICh, and approved by the European Commission. The programme provides an attractive mix of academic lectures, hands-on sessions, and field trips. A focus be on familiarizing participants with pedagogical strategies training for advisors in order to improve their consultation of farmers, on identified OA topics of interest, and on the usage of ICT tools for resource applications. Preparatory self-paced e-learning material support and prepare participants for the summer school. Follow-up activities (e.g. field consultation on selected case studies, assignments) maximize learning outputs.

5.2 Competences regarding OA

One of the main goals of extension work is to provide farmers with a basic understanding of a closed agroecological system, its components and functions. The CerOrganic training will support the CerOrganic trainees with the needed tools to handle the specific, farmer's oriented OA extension work with technical information and analytical thinking. After the CerOrganicToT the CerOrganic trainees shall have a profound understanding on ecological principles of OA, processes and relationships between factors. This knowledge needs to be utilized with analytical and critical thinking for decision making and farmers consultation. Naturally, a huge number of identified competencies on purely technical issues have been identified, especially on soil fertility management and crop protection. During the CerOrganic ToT, the trainees will learn how to use (e)-resources and develop an thinking methodology for analyzing all data of a dynamic with multiple components system. All technical sub-sections will be viewed through this particular prisma.

5.3 Competences regarding pedagogy, e-learning and e-teaching

The major pedagogical competences defined for an eLearning course are the ability to communicate effectively in different environments, the ability to use different, target group oriented presentation techniques, and good knowledge about the farmers environment and social situation.

These competences will be very important for developing and using relevant electronic content in training, for international cooperation. International organisations such as IFOAM and FAO and make key organic topics available worldwide. Organic training platforms facilitate connections and unite the organic world. The access to organic knowledge worldwide is increasing. OA farmers and trainers should be prepared and encouraged to use this source of information.

Traditional training methods pose a challenge for people in situational circumstances such as farmers to have up-to-date access to OA information and methods. As a result, an e-learning approach offers a number of advantages to acquire competences in OA. Adult learning is part of the life-long learning process and opportunities for these learners are increased by the adoption of e-learning strategies. Therefore part of the CerOrganic training should be offered by e-teaching and e-learning. The design of the course/training should focus and be tailored to the needs of the learner, the farmer, incorporating communication platforms, design of learning material and creating a blend of online instruction with physical presence instruction. In this way it is possible to further the aims of the CerOrganic project by tailoring the education platform to the needs of the learner.

5.4 Recommendations

The listed competences in OA show a broad distribution of areas. It is considered unrealistic for CerOrganic trainees to acquire these competences without prerequisite knowledge. The future CerOrganic Trainers should therefore have a profound background in an agriculture-related discipline. Therefore the Curriculum designers should define target groups which have university degree in agriculture or a related field and/or > 5 years experience in an agriculture-related discipline.

It is recommended to clearly follow a three period training scheme:

A. The preparatory period of self-paced e-learning
B. The learning period: The location training in Crete (Summer School)
C. The assignment & evaluation period: competences can be proved through assignments that involve actual farmers consultation on existing organic farming problems

CerOrganic training should give an overview of all the listed OA topics, ICT, pedagogy and e-learning. The courses of OA areas should present major topics, issues, and problems in OA where decision making is frequently required in the farm. The training should be seen as the first level in a modular training in organic agriculture for advisors. With the achieved compentences in the CerOrganic training, the future CerOrganic trainers/advisors can then

use the CerOrganic training approach to specialise on specific OA topics in order to further their comepetences in a defined OA-field.

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CerORGANIC

Project Information

CerOrganic is a two year Leonardo da Vinci Multilateral Project financed by the European Commission that aims to develop and test a quality assurance procedure for the vocational education/training of agricultural advisors/trainers in Organic Agriculture, based on the European Quality Assurance Reference Framework (EQARF).

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